

Claims

1. A data processing device for computer-aided tendering of power supply facilities, in particular substations, comprising computing means and a module library (17) for storing programme modules (2) representing pre-engineered parts of the facility, which modules (2) can be retrieved from the library (17) for being used in projecting the facility, characterised in that
 - a) the modules (2) are categorised using a multiple-index categorisation system (12) that is immediately accessible by an operator (19) who projects the facility and
 - b) the modules (2) are equipped with unified software interfaces to application routines (1a,...1d) that, when executed on the projected facility, create tendering information about the projected facility.
2. The data processing device as claimed in claim 1, characterised in that
 - a) in the categorisation system (12) each module (2) is attached at least three independent searching indices characterising at least a discipline, a function and a technical specification of the pre-engineered part within the facility and/or
 - b) based on the categorisation system (12) a module browser (11) with navigator for categorising and searching modules (2) in the library (17) is provided.
3. The data processing device as claimed in any of the preceding claims, characterised in that the modules (2) are typified as core modules (2a), which comprise sub-modules (10) and/or articles (9), and as black-box modules (2b), which are freely definable from a user interface or are predetermined by a supplier.

4. The data processing device as claimed in claim 3, characterised in that
 - a) core modules (2a) are attached cost information by means of a bill of quantity (8) comprising a number of occurrences of article-numbers and/or sub-modules (10) containing article-numbers, and cost information (15c) about the articles (9) is available from an article database (15), and
 - b) black-box modules (2b) are attached cost information by assigning the cost immediately, in particular integrally or subpart-wise, to the black-box modules (2b) themselves.
5. The data processing device as claimed in any of the preceding claims, characterised in that
 - a) the modules (2) are typified as rigid modules (2a), which are unchangeable from a user interface, and as parametrisable modules (2), which have a parameter or parameter set that is changeable from a user interface and
 - b) in particular that in parametrisable core modules (2) a sub-module (10) may have a parameter or parameter set (10a) that is changeable from a bill of quantity (8) from which the sub-module can be called.
6. The data processing device as claimed in any of the preceding claims, characterised in that
 - a) the application routines (1a,...1d) comprise routines for automatic cost calculation (1a), for tender text accumulation (1c), for technical data accumulation (1d) and, in particular, for drawing accumulation (1b) and/or
 - b) every module (2) has a module-descriptor (3) comprising standardized module data (4-10) characterising the module (2) and providing a standardized interface to the application routines (1a,...1d) for

delivering the module data (4-10) to the routines (1a,...1d).

7. The data processing device as claimed in claim 6b, characterised in that
 - a) the standardized module data (4-10) comprise: a bill of quantity (8) and prices (15c) of articles (9) and/or sub-modules (10), technical data (5), a tender text (4) and optionally a single-line diagram (6) and/or 3D-drawing (7) and/or
 - b) a tender text (4) contains a scope of supply, a description of sub-modules (10) or articles (9) of the module (2), and/or technical manuals (5) of articles (9).
8. The data processing device as claimed in any of the preceding claims, characterised in that module boundaries are defined to coincide with physical boundaries of a component or functional unit of the facility, with a sub-supplier's area of responsibility, and/or with existing module boundaries.
9. The data processing device as claimed in any of the preceding claims, characterised in that,
 - a) a module development area (16) is provided that comprises the module library (17) and software tools for defining and/or importing new modules (2) using the categorisation system (12) and/or
 - b) a project area (18) is provided that comprises a project memory space for downloading modules (2) from the library (17) for projecting and tendering purposes.
10. Use of a data processing device as claimed in any of the preceding claims for computer-aided tendering of power supply facilities, in particular substations.

11. A method for tendering a power supply facility, wherein a data processing device comprising a module library (17) for storing programme modules (2) that represent pre-engineered parts of the facility is present, the method comprising the steps of searching and downloading modules (2) from the library (17) and projecting the facility, characterised in that
 - a) the modules (2) are searched in the library (17) by an operator (19) using a multiple-index categorisation system (12) and
 - b) application routines (1a,...1d) are run by the operator (19) on the modules (2) of the projected facility to create tendering information about the projected facility.
12. The method as claimed in claim 11, characterised in that
 - a) a module browser interface (11) is presented to the operator (19) which provides for each module (2) at least three independent searching indices characterizing a discipline, a function and a technical specification of the module (2) and/or a module-name (14) encoding its function in an intuitively understandable way and/or a preview of files related to the module (2) and/or
 - b) a module-descriptor (3) comprising standardized module data (4-10) is automatically interfaced via a standardized interface to the application routines (1a,...1d) for delivering the module data (4-10) to the routines.
13. The method as claimed in any of the claims 11-12, characterised in that upon downloading a module (2) into a project
 - a) the module (2) being stored in the library (17) in generic form is instanced by assigning it a module type, a module number and, in the case of paramet-

risable modules (2), a module parameter setting and/or

- b) the module (2) is automatically detached from the library (17) and related cost information is automatically copied from an article database (15) into the project and can, in particular, be changed by the operator (19).
14. A computer programme for tendering power supply facilities comprising computer programme code means that are loadable and executable in a data processing device and that cause, when loaded and executed, the device to perform the steps of the method as claimed in any of the claims 11-13.
15. A computer programme for tendering power supply facilities comprising computer programme code means that are loadable and executable in a data processing device and that implement, when loaded and executed, the features of the data processing device as claimed in any of the claims 1-9.